REMARKS

This is in full and timely response to the final Office Action dated September 22, 2004. The present amendment amends claims 23, 24, 26, 36, 38, 39 and 44. Support for these amendments can be found variously throughout the specification, including, for example, page 26, lines 6-11. No new matter has been added.

Entry of this Amendment is proper under 37 C.F.R. §1.116 since the amendment: (a) places the application in condition for allowance (for the reasons discussed herein); (b) does not raise any new issues requiring further search and/or consideration; and (c) places the application in better form for appeal, should an appeal be necessary. The amendment is necessary and was not earlier presented because it is made in response to arguments raised in the final rejection. Entry of this amendment is respectfully requested. Reexamination and reconsideration in light of the above amendments and the following remarks are respectfully requested.

Claim Rejections – 35 U.S.C. § 103

In the Action, claims 23-27, 29-36, 38-39 and 41-44 were rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over the Admitted Prior Art ("APA" – detailed on pages 1-7 of the Background Section of the Applicant's application) in view of U.S. Patent No. 5,787,272 to Gupta et al. ("Gupta"). These rejections are respectfully traversed for at least the following reasons.

1. Claims 23, 25, 27, 29, 30-35 are Not Obvious

Independent claim 23 recites a parallel processor comprising, *inter alia*, a second processor element of a plurality of processor elements for executing at least a second user program of a plurality of user programs, the second processor element executing a wait release instruction, the wait release instruction commanding the first processor element to resume the processing of the first user program, **the second processor element continuing processing of the second user program after executing the wait release instruction.**

Although the APA arguably discloses a multiprocessor comprised of a plurality of CPUs, the APA fails to disclose, teach or suggest each of the limitations recited in claim 23. For example, **as conceded by the examiner**, the APA fails to disclose, teach or suggest *at least* a "second processor

9

element continuing processing of the second program after executing the wait release instruction", as is recited in claim 23 of the present invention. *See* pg. 3 of Action. Thus, in order to establish the requisite *prima facie* case of obviousness under § 103, not only must Gupta teach of a second processor element continuing processing of the second program after executing the wait release instruction, it must also teach that the APA should be modified to include a second processor element continuing processing in this manner, while still allowing the APA's multiprocessor to perform its stated objectives and function. Gupta, however, clearly fails to remedy the conceded deficiencies of the APA.

First and foremost, although Gupta arguably teaches of a "processor that will be able to continue executing instructions while waiting to synchronize" (see pg. 3, lines 35-41), Gupta clearly fails to disclose, teach or suggest *at least* a second processor element continuing processing of a second program after executing a wait release instruction, as is recited in independent claim 23 of the present application. At the very least, the examiner has failed to provide any disclosure, teaching or suggestion within Gupta of a **second** processor element continuing processing of a **second** program **after executing a wait release instruction**. As is apparent from claim 23, a "wait release instruction" is recited as a separate and distinct element from "a synchronization wait instruction". Thus, although Gupta may recite a "processor that will be able to continue executing instructions **while waiting to synchronize**", Gupta clearly fails to disclose, teach or suggest a **second** processor element continuing processing of a **second** program **after executing a wait release instruction**.

Further, independent claim 23 recites a parallel processor comprising, *inter alia*, [a] first processor element executing a wait instruction, wherein said **wait instruction resumes processing of said second user program** after said second user processor element executes said synchronization wait instruction, said **first processor element notifies** [a] **second processor element** that said first processor element is executing said **wait instruction**.

In contrast, although the APA arguably discloses a multiprocessor comprised of a plurality of CPUs, the APA fails to disclose, teach or suggest wherein said **wait instruction resumes processing of said second user program** after said second user processor element executes said synchronization wait instruction, said **first processor element notifies** [a] **second processor**

element that said first processor element is executing said **wait instruction** as disclosed in claim 23. In fact, the wait instruction of the first processor element of the APA (alleged to be the wait(prg_D) instruction of the PE11$_1$ on page 2 of the Office Action) does not resume processing of the second user program (alleged prg_D) as disclosed in claim 23. *See, e.g.*, Fig. 8. Further, the first processor element (alleged PE11$_1$) fails to notify the second processor unit (alleged PE11$_4$) that the wait instruction (alleged wait(prg_D)) is being executed in the APA. *See, e.g.*, Fig. 8.

Likewise, although Gupta arguably discloses parallel processors where a "processor...will be able to continue executing instructions while waiting to synchronize", Gupta fails to disclose, teach or suggest <u>at least</u> a **wait instruction resumes processing of said second user program** after said second user processor element executes said synchronization wait instruction, said **first processor element notifies [a] second processor element** that said first processor element is executing said **wait instruction** as disclosed in claim 23.

Accordingly, because the APA and Gupta, either alone or in combination, fail to disclose, teach or suggest each and every limitation of claim 23, a *prima facie* rejection of the claims has not been established and withdrawal thereof is respectfully requested. *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974) ("To establish prima facie obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art").

Moreover, the Action has failed to demonstrate how one of ordinary skill in the art would be lead to combine the teachings of Gupta with those of the APA. Specifically, the Action has failed to demonstrate how one of skill in the art would be led to modify the APA to incorporate a second processor element continuing processing of a second program after executing a wait release instruction, as is recited in independent claim 23. According to Federal Circuit precedent, the burden of establishing a *prima facie* case of obviousness under 35 U.S.C. § 103 rests squarely on the shoulders of the Examiner. *In re Rinehart*, 531 F.2d 1048, 1052 (C.C.P.A. 1976); *accord.* MPEP 2142. To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. *See, e.g., Ex parte Clapp*, 227 USPQ 972, 973 (Bd. Pat. App. & Inter. 1985); *accord.* MPEP 2143. Second, there must be a reasonable expectation that the proposed

11

modifications or combination would be successful. *In re Merck & Co., Inc.*, 800 F.2d 1091, 1097, 231 USPQ 375 (Fed. Cir. 1986); *accord.* MPEP 2143.02. Finally, the prior art reference (or references when combined) must teach or suggest each and every claim limitation. *See, e.g., In re Royka,* 490 F.2d 981, 180 USPQ 580 (CCPA 1974); *accord.* MPEP 2143.03.

With respect to the first element of a *prima facie* case of obviousness, it is established law that obviousness "cannot be established by combining the teachings of the prior art to produce the claimed invention, absent some teaching or suggestion supporting the combination." *ACS Hosp. Sys. V. Montefiore Hosp.*, 732 F.2d 1572, 1577, 221 USPQ 929, 933 (Fed. Cir. 1984). For example, one "cannot use hindsight reconstruction to pick and choose among isolated disclosures in the prior art to deprecate the claimed invention." *Ecolochem, Inc. v. Southern California Edison Company*, 227 F.3d 1361, 1371, 56 USPQ2d 1065 (Fed. Cir. 2000) (citing *In re Fine*, 837 F.2d 1071, 1075, 5, USPQ2d 1780, 1783 (Fed. Cir. 1988)). In fact, "[c]ombining prior art references without evidence of such a suggestion, teaching, or motivation simply takes the inventor's disclosure as a blueprint for piecing together the prior art to defeat patentability – *the essence of hindsight.*" *Id.* at 24 (citing *In re Dembiczak*, 175 F.3d 994, 999, 50 USPQ2d 1614, 1617 (Fed. Cir. 1999)) (emphasis added). Thus, "defining the problem in terms of its solution *reveals improper hindsight* in the selection of the prior art relevant to obviousness." *Id.* (citing *Monarch Knitting Mach. Corp. v. Sulzer Morat Gmbh*, 139 F.3d 877, 880, 45 USPQ2d 1977, 1981 (Fed. Cir. 1998)) (emphasis added).

In the present case, the examiner has attempted to satisfy the requisite *prima facie* showing of obviousness by alleging that "it would have been obvious to combine Gupta's teachings with the APA because the procedure for the processors to carry on execution will optimize the computing resources." *See* pg. 3 of Action. This cursory allegation, however, runs directly contrary to the teachings of the APA and Gupta. Specifically, if the second processor element of the APA (alleged in the Office Action to be satisfied by PE1 1$_4$) truly executes the "instruction code end" as a "wait release instruction" (as alleged by the examiner on page 3 of the Action), **the second user program** (alleged in the Office Action to be satisfied by the "prg_D" program") **would be de facto terminated, such that the processing of this second user program could not be resumed by the second processing element**. As such, the teachings of the APA explicitly demonstrate that the multiprocessor in the APA could not be modified in the manner suggested by the examiner. The

Office Action's response to the applicant's arguments (page 6 of the Office Action) does not overcome the argument that the APA could not be modified as suggested by the examiner. The examiner's statement that "Gupta supplies the mechanism of parallel processors continuing execution after initiating release instructions" <u>does not</u> overcome the fact that the alleged second user program in the APA would be de facto terminated after the "instruction code end" so that execution of the second user program would not be possible.

Accordingly, because a combination of the APA and Gupta would not lead to a reasonable expectation of success, and further because the examiner has failed to provide sufficient motivation to combine the references, a *prima facie* case of obviousness has not been established, and withdrawal of this rejection is respectfully requested. Moreover, aside from the novel limitations recited therein, dependent claims 25, 27, 29 and 30-35, being dependent either directly or indirectly upon independent claim 23, also represent allowable subject matter for at least the reasons set forth above. Withdrawal of the rejection of these claims is therefore respectfully requested.

2.   Independent Claim 24 is Not Obvious

Independent claim 24 recites a parallel processor comprising, *inter alia*, a second processor element of a plurality of processor elements for executing at least a second user program of a plurality of user programs, the second processor element executing a wait release instruction, the wait release instruction commanding the first processor element to resume the processing of the first user program, **the second processor element continuing processing of the second user program after executing the wait release instruction.**

Further, independent claim 24 recites a parallel processor comprising, *inter alia*, [a] first processor element executing a wait instruction, wherein said **wait instruction resumes processing of said second user program** after said second user processor element executes said synchronization wait instruction, said **first processor element notifies [a] second processor element** that said first processor element is executing said **wait instruction**.

For reasons essentially similar to those set forth above with respect to the rejection of claim 23, the APA and Gupta, either alone or in combination, fail to disclose, teach or suggest *at least* a second processor element continuing processing of the second user program after executing the wait

release instruction, the wait instruction resumes processing of the second user program after the second user processor element executes the synchronization wait instruction and the first processor element notifies the second processor element that the first processor element is executing the wait instruction, as is recited in independent claim 24. In addition, for at least the reasons set forth above in connection with the rejection of claim 23, a combination of APA and Gupta would not lead to a reasonable expectation of success, such that the examiner has failed to provide sufficient motivation for combining these references. Accordingly, a *prima facie* case of obviousness has not been established with respect to claim 24, and withdrawal of this rejection is respectfully requested.

3.   Independent Claim 26 is Not Obvious

Independent claim 26 recites a parallel processor comprising, *inter alia*, a second processor element of a plurality of processor elements for executing at least a second user program of a plurality of user programs, the second processor element executing a wait release instruction, the wait release instruction commanding the first processor element to resume the processing of the first user program, **the second processor element continuing processing of the second user program after executing the wait release instruction**.

Further, independent claim 26 recites a parallel processor comprising, *inter alia*, [a] first processor element executing a wait instruction, wherein said **first processor element notifies** [a] **second processor element** that said first processor element is executing said **wait instruction**.

For reasons essentially similar to those set forth above with respect to the rejection of claim 23, the APA and Gupta, either alone or in combination, fail to disclose, teach or suggest *at least* a second processor element continuing processing of the second user program after executing the wait release instruction and the first processor element notifies the second processor element that the first processor element is executing the wait instruction, as is recited in independent claim 26. In addition, for at least the reasons set forth above in connection with the rejection of claim 23, a combination of APA and Gupta would not lead to a reasonable expectation of success, such that the examiner has failed to provide sufficient motivation for combining these references. Accordingly, a *prima facie* case of obviousness has not been established with respect to claim 26, and withdrawal of this rejection is respectfully requested.

4.   Claims 36, 41 and 42 are Not Obvious

Independent claim 36 recites a parallel processing method comprising, *inter alia*, *a second processor element continuing processing of a second user program after executing a wait release instruction*.

Further, independent claim 36 recites a parallel processing method comprising, *inter alia*, [a] first processor element executing a wait instruction, wherein said **wait instruction resumes processing of said second user program** after said second user processor element executes said synchronization wait instruction, said **first processor element notifies** [a] **second processor element** that said first processor element is executing said **wait instruction**.

For reasons essentially similar to those set forth above with respect to the rejection of claim 23, the APA and Gupta, either alone or in combination, fail to disclose, teach or suggest *at least* a second processor element continuing processing of the second user program after executing the wait release instruction, the wait instruction resumes processing of the second user program after the second user processor element executes the synchronization wait instruction and the first processor element notifies the second processor element that the first processor element is executing the wait instruction, as is recited in independent claim 36. In addition, for at least the reasons set forth above in connection with the rejection of claim 23, a combination of APA and Gupta would not lead to a reasonable expectation of success, such that the examiner has failed to provide sufficient motivation for combining these references. Accordingly, a *prima facie* case of obviousness has not been established with respect to claim 36, and withdrawal of this rejection is respectfully requested.

Moreover, aside from the novel limitations recited therein, dependent claims 41 and 42, being dependent upon independent claim 36, also represent allowable subject matter for at least the reasons set forth above. Withdrawal of the rejection of these claims is therefore respectfully requested.

5.   Independent Claim 38 is Not Obvious

Independent claim 38 recites a parallel processing method comprising, *inter alia*, *a second*

processor element continuing processing of a second user program after executing a wait release instruction.

Further, independent claim 38 recites a parallel processing method comprising, *inter alia*, [a] first processor element executing a wait instruction, wherein said **wait instruction resumes processing of said second user program** after said second user processor element executes said synchronization wait instruction, said **first processor element notifies** [a] **second processor element** that said first processor element is executing said **wait instruction**.

For reasons essentially similar to those set forth above with respect to the rejection of claim 23, the APA and Gupta, either alone or in combination, fail to disclose, teach or suggest *at least* a second processor element continuing processing of the second user program after executing the wait release instruction, the wait instruction resumes processing of the second user program after the second user processor element executes the synchronization wait instruction and the first processor element notifies the second processor element that the first processor element is executing the wait instruction, as is recited in independent claim 38. In addition, for at least the reasons set forth above in connection with the rejection of claim 23, a combination of APA and Gupta would not lead to a reasonable expectation of success, such that the examiner has failed to provide sufficient motivation for combining these references. Accordingly, a *prima facie* case of obviousness has not been established with respect to claim 38, and withdrawal of this rejection is respectfully requested.

6.   Independent Claim 39 is Not Obvious

Independent claim 39 recites a parallel processing method comprising, *inter alia*, *continuing processing of a second user program after executing a wait release instruction.*

Further, independent claim 39 recites a parallel processing method comprising, *inter alia*, [a] first processor element executing a wait instruction, wherein said **first processor element notifies** [a] **second processor element** that said first processor element is executing said **wait instruction**.

For reasons essentially similar to those set forth above with respect to the rejection of claim 23, the APA and Gupta, either alone or in combination, fail to disclose, teach or suggest *at least* a second processor element continuing processing of the second user program after executing the wait release instruction and the first processor element notifies the second processor element that the first

processor element is executing the wait instruction, as is recited in independent claim 39. In addition, for at least the reasons set forth above in connection with the rejection of claim 23, a combination of APA and Gupta would not lead to a reasonable expectation of success, such that the examiner has failed to provide sufficient motivation for combining these references. Accordingly, a *prima facie* case of obviousness has not been established with respect to claim 39, and withdrawal of this rejection is respectfully requested.

7.   Independent Claim 43 is Not Obvious

Independent claim 43 recites a storage medium for storing in a computer-readable format routines wherein, *inter alia*, a second processing executes a wait release instruction in a second program of a plurality of programs, the wait release instruction resuming execution of a first processing, *the second processing continuing execution of the second program after executing the wait release instruction.*

For reasons essentially similar to those set forth above with respect to the rejection of claim 23, the APA and Gupta, either alone or in combination, fail to disclose, teach or suggest *at least* a second processor element continuing processing of the second user program after executing the wait release instruction, as is recited in independent claim 43. In addition, for at least the reasons set forth above in connection with the rejection of claim 23, a combination of APA and Gupta would not lead to a reasonable expectation of success, such that the examiner has failed to provide sufficient motivation for combining these references.

Further, the examiner alleges that the limitation wherein the second processing enters a synchronization waiting state by executing the wait release instruction until the first processing enters the waiting state when said first processing is not in the waiting state is an obvious variation from claim 23 and further would "naturally have flowed from the APA's parallel process coordination teachings". However, the Office Action fails to provide evidence to support these allegations. It is not clear why the second processing (alleged $P11_4$) would naturally enter a synchronization waiting state by executing the wait release instruction (alleged "end" instruction) until the first processing (alleged $P11_1$) enters the waiting state (alleged wait(prg_D) instruction) in

the APA as concluded in the Office Action. Accordingly, a *prima facie* case of obviousness has not been established with respect to claim 43, and withdrawal of this rejection is respectfully requested.

8.   Independent Claim 44 is Not Obvious

Independent claim 44 recites a storage medium for storing in a computer-readable format routines wherein, *inter alia*, **a second processing continues execution of a second program after executing a wait release instruction without suspending the second processing and said first processing notifies said second processing that said first processing is executing said wait instruction.**

For reasons essentially similar to those set forth above with respect to the rejection of claim 23, the APA and Gupta, either alone or in combination, fail to disclose, teach or suggest *at least* a second processor element continuing processing of the second user program after executing the wait release instruction and the first processing notifying the second processing that the first processing is executing the wait instruction, as is recited in independent claim 44. In addition, for at least the reasons set forth above in connection with the rejection of claim 23, a combination of APA and Gupta would not lead to a reasonable expectation of success, such that the examiner has failed to provide sufficient motivation for combining these references. Accordingly, a *prima facie* case of obviousness has not been established with respect to claim 44, and withdrawal of this rejection is respectfully requested.

Conclusion

For at least the foregoing reasons, each of the presently pending claims in this application is believed to be in immediate condition for allowance. Accordingly, the examiner is respectfully requested to pass this application to issue. If the examiner has any comments or suggestions that could place this application in even better form, the examiner is invited to telephone the undersigned attorney at the below-listed number.

Applicant believes no fee is due with this response. However, if a fee is due, please charge our Deposit Account No. 18-0013, under Order No. SON-1661 from which the undersigned is authorized to draw.

Dated: November 10, 2005   Respectfully submitted,

By_____
Ronald P. Kananen
Registration No.: 24,104
RADER, FISHMAN & GRAUER PLLC
1233 20th Street, N.W.
Suite 501
Washington, DC 20036
(202) 955-3750
Attorney for Applicant

DC209720

19